Rule WLM605: XCF inbound message buffer space may be too small

Finding: CPExpert has determined that a large percent of the cross system coupling facility (XCF) inbound messages were rejected because of constraints on the amount of inbound message buffer space.

Impact: This finding can have a MEDIUM IMPACT or HIGH IMPACT on the signalling performance of the sysplex.

Logic flow: This a basic finding. There are no predecessor rules.

Discussion: The XCF component of MVS/ESA allows authorized programs on one MVS system in a sysplex to communicate with programs on the same system or on other systems. A typical example of this communication is between CICS regions; CICS regions often communicate with other CICS regions in the same system or with CICS regions on other systems in the sysplex.

Please refer to the discussion associated with Rule WLM601 for additional information about XCF buffers.

Inbound message buffers are used to receive messages from another system. These buffers are allocated, as needed, to support the message traffic load. Message buffer space for **inbound** messages is separated by signalling path.

Message buffer space for inbound traffic is assigned by the MAXMSG parameter on the PATHIN statement for each inbound signalling path. If no MAXMSG parameter is specified, the value on the MAXMSG parameter of the COUPLE statement is used as a default buffer space specification.

Message buffers associated with an inbound signalling path do not receive messages over any other inbound signalling path. If the inbound message buffer space required to support messages on a particular inbound signalling path is exhausted, MVS will reject additional messages until message buffer space becomes available in for the inbound signalling path.

SMF Type 74 (Subtype 2) provides statistics about the number of inbound messages received, where the messages are sent, how many messages were rejected because there was insufficient message buffer space, and how much input message buffer space was allocated.

CPExpert analyzes this information to determine whether sufficient message buffer space has been defined. CPExpert computes the total inbound message traffic. CPExpert concludes that the inbound message buffer space is too small when more than the value specified for the **PCTREJ** guidance variable of the inbound messages were rejected because of no buffer space. The default specification for the PCTREJ guidance variable is **%LET PCTREJ = 0.1;** indicating that Rule WLM605 will be produced when more than one-tenth of a percent of the inbound traffic is rejected for insufficient buffer space.

CPExpert produces Rule WLM605 to alert you that a significant percent of inbound messages have been rejected because of insufficient buffer space.

The following example illustrates the output from Rule WLM605:

```
RULE WLM605: THE XCF INBOUND MESSAGE BUFFER SPACE MAY BE TOO SMALL

   The inbound message buffer space may be too small.  CPExpert noticed
   that XCF input requests were rejected because of constraints on the
   amount of input message buffer space.  An asterisk beside the buffer
   space means that the buffer space DECREASED during the reported
   measurement interval, from the preceding measurement interval.  You
   should consider increasing the amount of input message buffer space.
   This finding applies to the following measurement intervals:

                         RECEIVED   TOTAL    REJECTED      PCT     BUFFER
   MEASUREMENT INTERVAL    FROM   REQUESTS   REQUESTS   REJECTED    SPACE
   13:00-13:30,26MAR1996   J80      9,242       462        5.0       500K ***
```

Suggestion: The available inbound buffer space for an inbound path can be too small because (1) the amount initially specified on the PATHIN statement was too low, (2) a system operator could have decreased the amount of inbound message buffer space for one or more paths, or (3) one or more paths have been deleted or have failed.

If Rule WLM605 is produced, CPExpert suggests that you consider the following alternatives[1]:

- You should evaluate the amount of message space specified on the MAXMSG parameter of the PATHIN statement. You should consider increasing the inbound message buffer space.

[1]**WARNING**: There exists little practical experience with analyzing coupling facility data and with selecting proper values for the controlling parameters. The CPExpert analysis and suggestions are based on (1) the information contained in the referenced documents and (2) our analysis of data provided by IBM or CPExpert users. Please keep this paucity of knowledge in mind when considering the alternatives. Additionally, **please** provide Computer Management Sciences with feedback!

- You should assess whether a system operator changed the amount of inbound message buffer space assigned to an inbound path. CPExpert will notify you (by placing '***' beside the buffer space value) if the amount of allocated message buffer space assigned to the inbound path **decreased** from the previous RMF measurement interval.

  If the system operator did make a change resulting in less message buffer space for an inbound path, you should verify that there was a sound rationale for the action.

- You should assess whether there has been a decrease in the number of inbound paths. A system operator could have issued the SETXCF STOP command to delete a signalling path, or a path could have failed.

- When Rule WLM605 is produced, CPExpert often will produce Rule WLM620 to identify the outbound/inbound path combination that is experiencing problems.

  - It is possible that Rule WLM605 would be produced but CPExpert cannot identify an outbound/inbound path combination causing problems. This situation could occur when there is a **general** problem with the inbound buffer space over all paths, but no path combination causes the problem.

  - It is possible that Rule WLM605 would **not** be produced, but CPExpert could produce Rule WLM620. This situation could occur when there is not a **general** problem with the inbound buffer space for all paths, but a particular outbound/inbound path combination is experiencing problems.

    Rule WLM605 is based on the PCTREJ guidance variable, which guides the assessment of rejects of outbound messages (analyzing SMF Type 74, Subtype 2, System Data). Rule WLM620 is based on comparing the outbound path BUSY with the inbound path BUFFER UNAVAILABLE condition (analyzing SMF Type 74, Subtype 2, Path Data).

    Since different data are analyzed by different logic paths, it is not always possible for CPExpert to produce both Rule WLM605 and Rule WLM620.

- If Rule WLM605 occurs frequently and there is no action you wish take, you should change the guidance to CPExpert by altering the PCTREJ guidance variable in USOURCE(WLMGUIDE).

Reference: MVS/ESA: Setting Up a Sysplex (GC28-1449)
Section 5: Planning Signalling Services in a Sysplex

MVS/ESA: Initialization and Tuning Reference (GC28-1452)
COUPLExx (Cross-System Coupling Facility Parameters)

OS/390: Setting Up a Sysplex (GC28-1779)
Section 5: Planning Signalling Services in a Sysplex

OS/390: Initialization and Tuning Reference (GC28-1752)
COUPLExx (Cross-System Coupling Facility Parameters)

z/OS: Setting Up a Sysplex (SA22-7625)
Section 5: Planning Signalling Services in a Sysplex

z/OS: Initialization and Tuning Reference (SA22-7592)
COUPLExx (Cross-System Coupling Facility Parameters)

"Parallel Sysplex Performance: tuning tips and techniques,"
Kelley, Joan (IBM, Poughkeepsie, NY), SHARE 86, February 1996.

z/OS V1R2: MVS System Messages, Volume 10 (IXP-IZP), SA22-7640

z/OS V1R3: MVS System Messages, Volume 10 (IXP-IZP), SA22-7640

z/OS V1R4: MVS System Messages, Volume 10 (IXP-IZP), SA22-7640 |

